THE PSYCHOLOGICAL READINESS OF ATHLETES AFTER SUSTAINING AN INJURY

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Submitted to the faculty of the University Graduate School in partial fulfillment of the requirements for the degree
Master of Science
In the School of Public Health
Indiana University
June 2020

Acceptance Page

Accepted by the Graduate Faculty, Indiana University, in partial fulfillment of the requirements for the degree of Master of Science.

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The purpose of this study is to determine if there are differences in the psychological readiness of an athlete when returning to play based on a player's status on the team (starter v. non-starter) or their severity of injury (short-term v. long-term). A total of 14 collegiate athletes who sustained an injury that withheld them from participation for at least 24 hours were included in this study. The participants completed the Athlete Fear Avoidance Questionnaire (AFAQ), Injury-Psychological Readiness to Return to Sport Scale (I-PRRS), Profile of Mood States (POMS), and demographic information within 72 hours of becoming injured. The participants completed those same questionnaires a second time after completing their prescribed rehabilitation and being cleared to return to play. A total of 10 participants completed both sets of questionnaires and were included in the analysis of data. There was a statistically significant difference between the immediately after injury scores and return to play scores for the AFAQ, but not for the I-PRRS and POMS. There were no statistically significant differences between starters and non-starters for all 3 questionnaires or between athletes with short-term and long-term injuries for all 3 questionnaires. Information about psychological readiness could help athletic trainers create appropriate rehabilitation programs that address an athlete's psychological readiness and doing so could possibly reduce the athlete's time until he or she is able to return to play.

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INTRODUCTION

Injuries not only affect athletes physiologically, but also psychologically. Both pain and emotional distress increase after any physical injury occurs.[1] Athletes have reported significant increases in depression and anger post-injury, while drive continues to decrease.[1] Psychological distress such as depression and anger can actually weaken the physiological healing process by increasing autonomic nervous system activity and impairing immune function.[2-4] Research has found that psychological distress and worry may persist for up to 1-year after athletes have become medically cleared to return to play by their athletic trainer or physician.[5,6] Individuals who return to play before they are psychologically ready may increase their chance of getting re-injured, experience depression, fear and anxiety, each of which could decrease their athletic performance.[7-9]

Because athletic trainers often serve as the primary health care providers for athletes who are injured, they need to consider an athlete's physical status as well as their psychological status after an injury occurs. Current educational standards require that athletic trainers are educated on the psychological aspects of injuries; however, they do not necessarily learn how to use those skills effectively during the athletic rehabilitation process.[10] The implementation of information and understanding on how psychological readiness may be influenced is often learned from experiences, and symposiums or conferences they attend outside of their formal education. Therefore, the purpose of this study is to determine if there are differences in the psychological readiness of an athlete when returning to play based on the player's status on the team (starter v. non-starter) or their severity of injury (short-term v. long-term). Information about psychological readiness could help athletic trainers create appropriate rehabilitation programs which address an

athlete's psychological readiness, possibly reducing the athlete's time until he or she is able to return to play.

METHODS

Participants

A total of 14 intercollegiate athletes participated in this study. Participants for this study were recruited from one large university and one small university. Participants were 19.86 ± 1.23 years old. Individuals were included in this study if they were 18 years of age or older, participated in an NCAA regulated sport, and became injured while playing their respective sport. An injury was defined as any musculoskeletal disorder that withheld the athlete from participation for at least 24 hours. Exclusion criteria included sustaining an injury that did not withhold the athlete from participation for at least 24 hours or not completing all 3 questionnaires both times. Informed consent was obtained from all participants. This study was also approved by the university's institutional review board. The reported injuries included an achilles strain (n=1), adductor strain (n=1), ankle sprains (n=6), a knee sprain (n=1), a tibial stress reaction (n=1), an acromioclavicular sprain (n=1), and hamstring strains (n=3). Out of the 14 participants, only 10 participants completed both sets of questionnaires; therefore, the 4 participants who did not take the questionnaires both times were excluded from this study.

Procedures

When an athlete became injured their athletic trainer would provide them with the "immediately after injury" QR code. This allowed the athlete to complete the Athlete Fear Avoidance Questionnaire (AFAQ), the Injury Psychological Readiness to Return to Sport Scale (I-PRRS), the Profile of Mood States (POMS) and the demographic information questionnaire.

The athlete then completed their prescribed treatment and rehabilitation protocol that was determined by their primary healthcare provider. Once the athlete returned to play, he/she was given the "return to play" QR code and completed the AFAQ, I-PRRS, POMS and demographic information questionnaire again. Close communication was kept between the athletic trainers and the primary investigator to ensure that athletes who had become injured took the questionnaires within 72 hours of both getting injured and returning to play.

Instrumentation

Athlete Fear Avoidance Questionnaire

The Athlete Fear Avoidance Questionnaire is a scale that measures injury-related fear avoidance in athletes with 10 statements that are related to injuries and athletics.[11] Each item is scored between a 1-5 Likert scale with 1 being 'Not at all' and 5 being 'Completely Agree'. All 10 items are totaled for a final score, with a lower value being indicative of being psychologically ready for return to play. Good validity and reliability have been established by Dover and Amar.[12]

Injury Psychological Readiness to Return to Sport Scale

The Injury Psychological Readiness to Return to Sport Scale (I-PRRS) is a six-item response scale with each response item ranging from 0 to 10. This scale is used to assess an athlete's psychological readiness to return to full sport participation after athletic injury.[13] The maximum score an athlete can get is a 60. A score of 60 implies the athlete has the utmost confidence to return to sport at that time, a score of 40 implies the athlete has only moderate confidence and a score of 20 implies the athlete has low overall confidence to return to participation. Content validity of the I-PRRS has been established by Glazer. Concurrent validity

was demonstrated because of the relationships found between the scale and total mood disturbance scores. Since the athlete scores were related to those of the athletic trainers, external validity was also shown.[13]

Profile of Mood States

The Profile of Mood States (POMS) is a 65-item general scale used to assess total mood disturbance.[14] The POMS assesses 6 mood states: Tension-Anxiety, Depression- Dejection, Anger-Hostility, Vigor-Activity, Fatigue-Inertia, and Confusion-Bewilderment. A Total Mood Disturbance (TMD) score is obtained by adding the negative mood factors of Tension-Anxiety(9 items), Depression-Dejection(15 items), Anger-Hostility(12 items), Fatigue-Inertia(8 items), and Confusion-Bewilderment(7 items), subtracting the score of the positive mood factor, Vigor-Activity(14 items), and adding a constant of 100. Each item is rated on 0-4 Likert scale with 0 being 'not at all' and 4 being 'extremely'. The total score for the POMS ranges from 68 to 240. A high score means that the athlete has many negative moods with low vigor, while a low score means the athlete has few negative moods and high vigor. The POMS was claimed to be valid for use in sport and exercise environments by McNair, who showed evidence of concurrent and predictive validity and produced normative data.[14]

Statistical Analysis

IBM SPSS (version 26) was used for all statistical analysis. A paired samples t-test was used to determine differences between the immediate post injury score and the return to play score for all athletes for each questionnaire. A 2x2 mixed ANOVA was used to determine differences between starters and non-starters for each questionnaire. A separate 2x2 mixed ANOVA was used to determine differences between athletes with a time loss of less than 4

weeks and a time loss greater than 4 weeks for each questionnaire. A priori alpha level was set at $p < .05$.

RESULTS

Descriptive statistics of patients' demographic information can be found in table 1. There was a statistically significant difference between the immediate injury score and return to play score with the AFAQ ($t_9 = 2.88$, $p = 0.02$). The mean difference between the immediate injury score and return to play score with the AFAQ was 4.40 ± 4.84. There were no statistically significant differences between the immediate injury score and return to play score with the I-PRRS ($t_9 = -1.05$, $p = 0.32$) or the POMS Total Mood Disturbance (TMD) ($t_9 = 0.83$, $p = 0.43$) questionnaires. The mean difference between the immediate injury score and return to play score for the I-PRRS was -2.80 ± 8.47. The mean difference between the immediate injury score and return to play score for the POMS TMD was 8.80 ± 33.50. The POMS subscore results can be found in table 2. For the AFAQ, I-PRRS, and POMS TMD, improvement was shown from the mean scores (table 3), when taken immediately after injury and when returning to play. Individual participant scores differed immediately after injury and when returning to play for the AFAQ (graph 1), I-PRRS (graph 2), and POMS TMD (graph 3).

Starter v. Non-Starter

There was not a statistically significant difference between starter and non-starter athletes for the AFAQ ($F_{1,8} = 0.09$, $p = 0.77$), I-PRRS ($F_{1,8} = 1.32$, $p = 0.28$), or POMS TMD ($F_{1,8} = 0.27$, $p = 0.62$). The mean AFAQ score for starters immediately after injury was 21.33 ± 5.47 and 21.00 ± 3.83 for non-starters. The mean AFAQ return to play score for starters was 17.33 ± 4.32 compared to non-starters (16.00 ± 3.74). Starters' immediately after injury mean scores and return to play mean scores the for the I-PRRS was 45.33 ± 8.66 and 45.67 ± 7.79, respectively.

Non-starters' immediately after injury mean score (42.25 ± 3.69) was lower than their return to play mean scores (48.75 ± 8.66) the for the I-PRRS. The mean POMS TMD score for starters immediately after injury was 135.00 ± 48.22 and return to play was 121.50 ± 18.25. The mean POMS TMD score for non-starters immediately after injury was 123.00 ± 29.69 and return to play was 121.25 ± 29.48.

Short Term Injury v. Long Term Injury

There was not a statistically significant difference between athletes with a time loss less than 4 weeks (short-term injury) and athletes with a time loss greater than 4 weeks (long-term injury) for the AFAQ ($F_{1,8} = 0.01$, $p = 0.92$) and I-PRRS ($F_{1,8} = 0.02$, $p = 0.91$), nor were there differences in POMS TMD scores for athletes with short-term injuries and athletes with long-term injuries ($F_{1,8} = 1.04$, $p = 0.34$). However, the mean AFAQ score for athletes with a short-term injury was lower (20.00 ± 4.43) than athletes with a long-term injury (24.00 ± 4.58). The mean return to play score for athletes with a short-term injury was 15.71 ± 2.81 and 19.33 ± 5.69 for athletes with a long-term injury for the AFAQ. Athletes with a short-term injury had a mean immediately after injury score of 45.00 ± 6.56 and athletes with a long-term injury had a mean score of 42.00 ± 9.00 for the I-PRRS. Athletes with a short-term injury and athletes with a long-term injury return to play mean scores the for the I-PRRS was 47.57 ± 7.48 and 45.33 ± 10.12, respectively. The mean POMS TMD score for athletes with a short-term injury was higher (139.29 ± 44.99) than their return to play scores (123.43 ± 24.97). The mean POMS TMD score for athletes with a long-term injury was 109.00 ± 16.52 and return to play was 116.67 ± 14.74. Comparisons based on surgery and no surgery was not performed due to none of the participants needing surgery for their injury.

DISCUSSION

The purpose of this study was to determine if there are differences in the psychological readiness of an athlete when returning to play based on a player's status on the team (starter v. non-starter) or their severity of injury (short-term v. long-term) in college varsity female and male athletes participating in various sports at either a Division I or Division III University.

A significant difference was observed between the immediate injury score and return to play score for the AFAQ. Athletes scored higher on the AFAQ when taking it immediately after they became injured, meaning that they expressed more fear about returning to play due to their injury. However, the AFAQ score of these athletes that was assessed at the time they returned to play had decreased significantly, meaning that they had become more psychologically ready to return to play and did not display as much, if any, fear avoidance. Our results suggest that an athlete's fear avoidance will decrease over time due to the mean scores being very low on the scale. The mean score in this study immeditately after injury (21.20 ± 4.64) was lower than a different group of injured athletes' mean score (26.00 ± 8.00) in a study by Fischerauer and collegues.[15] The mean score in this study when returning to play (16.80 ± 3.94) was lower than a predominately healthy athlete group's mean score (23.70 ± 6.98) in a previous research study by Dover and Amar.[11] These findings are also consistent with another research study,[16] which showed improvement of the AFAQ scores (22.70 ± 5.50 to 13.60 ± 3.50) and indicates fear avoidance decreases significantly over time as athletes complete their rehabilitation and their injuries continue to heal. Each individual athlete's fear avoidance may decrease at different rates; however, if their injury is continuing to get better and heal then their overall fear avoidance will be decreased.

A study by Slagers and collegues[17] investigated athletes who had received surgery to reconstruct their torn anterior cruciate ligmament. The mean I-PRRS score of those athletes at least five months post-surgery was 43.20 ± 13.10 while the mean score in this study was higher both immediately after injury (44.10 ± 6.98) and when returning to play (46.90 ± 7.82). A previous study by O'Conner and collegues[18] showed that the mean POMS TMD scores of healthy college aged swimmers was 116.95 ± 20.00. The mean score of healthy college aged swimmers was acutally higher than a study by Turner and collegues[19] when looking at athletes immediately after injury (109.07 ± 17.89) and when returning to play (93.00 ± 7.90). The mean score both immediately after injury and when returning to play for this study was higher than both of the two studies previously mentioned.

For the AFAQ, I-PRRS and POMS TMD, significant improvements were found from assessments made immediately after injury and again when returning to play. Fear avoidance decreased as did mood disturbances, while scores on the I-PRRS increased, indicating that athletes were feeling more psychologically ready to return to full sport participation. Research suggests that as an athlete progresses through the rehabilitation and they are getting closer to returning to play, they lessen in negative emotions that are associated with sustaining the initial injury and shift more toward predominantly positive emotions.[20]

There were no significant differences between athletes who are starters and athletes who are non-starters and their scores on the AFAQ, I-PRRS, or POMS TMD. However, previous research has shown that more successful athletes have lower levels of tension, depression, anger, fatigue and confusion than unsuccessful athletes, and higher levels vigor.[21] Our results suggest that both starters and non-starters are psychologically affected when sustaining an injury and one is not more affected than the other. Other research has found that athletes who are more involved

in sports prior to their injury have higher confusion and perceive their injury to be less at the end of their rehabilitation suggesting that emotional disturbance may be higher in athletes who invest more time in sport.[20] This suggestion can be supported by our results because the POMS TMD score for the starters was higher than the non-starters, but when both groups returned to play they had similar scores. Although other research[21] has found that more successful athletes often have slightly better POMS profiles than less successful athletes, it is possible that starters may feel more pressure to maintain their spot on the team, not let teammates and coaches down, as well as return to their prior skill level before injury, which may ultimately lead to higher POMS scores.[20] Other research supports this possibility. A single-case study by McDonald and Hardy[21] found that a starting softball player had increases in POMS depression, confusion, tension and disturbance that occurred within 24 hours of becoming injured. When getting closer to returning to play she was assigned to a less demanding position and right before she returned to play her mood disturbances decreased while her confidence increased.[22]

There were no significant differences between athletes with short-term injuries and athletes with long-term injuries and their scores on the AFAQ, I-PRRS, or POMS. Our results suggest that athletes who become injured are psychologically impacted, but the length of time it takes for the athlete to return to play, either less than 4 weeks (short-term) or more than 4 weeks (long-term) did not influence the psychological variables assessed in this study differently. However, other research has found that athletes who sustain a short-term injury are likely to respond with shock and relief, whereas athletes who sustain a long-term injury react in fear and anger.[21] Athletes who sustain a short-term injury react to rehabilitation by acting impatient and optimistic.[21] When the athlete is able to return to play, the athlete displays eagerness and anticipation.[23] Clement and colleagues[23] found that athletes who sustain a long-term injury react

to rehabilitation with irrational thoughts and frustration of not being able to perform simple tasks as well as caution when trying to perform different tasks they have not been able to perform since their injury. When the athlete is finally able to return to play the athlete shows acknowledgement, feelings of excitement as well as anxiety related to possible reinjury.[23] Ardern and colleagues[20] concluded that injury severity may have an influence on the readiness to return to play of athletes by the amount of time the athlete has been injured and influencing the athlete's fear to returning to sport. More prolonged and severe negative psychological responses may be exhibited in athletes with more severe injuries, which can carry over to the return to play phase.[16] This finding was paralleled in the results of this study; the mean POMS TMD scores decreased over time for the athletes who sustained short-term injuries, but increased over time for athletes who sustained long-term injuries. Athletes who sustained short-term injuries were continuing to improve and not display as much mood disturbance when they returned to play, whereas athletes who sustained long-term injuries still had negative emotions and increased mood disturbance when they were cleared to return to play. In addition, the AFAQ scores decreased over time for both the short-term and long-term injury groups; however, the long-term injury group ended up having higher AFAQ scores and lower I-PRRS than the short-term injury group. All athletes did not display as much fear avoidance as they did immediately after their injury occurred, but the long-term injury athletes displayed overall more fear avoidance and less confidence than the short-term injury athletes.

Other researchers argue that the severity of injury does not solely influence the psychological response an athlete has to an injury, but it is rather the interaction the athlete has with teammates, coaches as well as the type of environment that they are in.[24] In a study by Glazer,[13] it was found that psychological readiness scores exhibited a quadratic trend; meaning

they were lowest for the I-PRRS immediately after injury for all athletes regardless of the extent of the injury. The scores then increased as the athletes completed rehabilitation and became more prepared to play again.[13] However, if an athlete's recovery took longer than originally expected, confidence decreased until the athlete physically recovered.[13] All athletes who sustain an injury are impacted psychologically in one way or another. The time until he or she returns to play does not necessarily influence the way the athlete is psychologically affected.

Clinical Implications

The psychological impact an injury can have on an athlete should be made aware and addressed not only to the athletic trainer, but to the athlete as well. The use of specific questionnaires that are created for determining how athletes feel following an injury and if they display any hesitation when returning to play should be implemented in all rehabilitation programs. Patients reporting a lack of confidence or fear of reinjury when returning to play may be at increased risk of not returning to their preinjury level and could also require additional support during rehabilitation.[17] All athletes are impacted psychologically one way or another after sustaining an injury and clinicians should consider using some type of questionnaire or scale to identify those patients.

Limitations and Future Research

A limitation of this study was that there were only 14 participants, and none of them required surgery for their injury that they had sustained. Therefore, we were not able to look at the psychological readiness difference between athletes who did not need surgery and athletes who did need surgery for their injury. The nature and timing of this study did not allow more participants to be added easily which is a limitation as well.

Another limitation to this study is the extent of rehabilitation that the athlete received and whether their rehabilitation programs included diffrernt psychosocial techniques such as positive self-talk, visualization, or goal setting which could have influenced the amount of psychological readiness the athletes experienced.

Additional research should be done with a larger sample size as well as specific athletes who did have surgery for their injury in order to test for the possibility of differences in the psychological responses of more severely injured athletes. Further research that investigates if including different psychosocial interventions into an athlete's rehabilitation program such as goal setting, positive self-talk, or stress inoculation training, influence one's psychological readiness to return to play should be conducted.

There are many challenges that athletic trainers face when trying to have their patient complete any type of patient reported outcome measure (PROM) or questionnaire. Some athletic trainers say that they do not administer PROMs or questionnaires because they take too long to complete, but one way to help with that situation would be to have the patient fill it out while they are icing/having a modality used on the injured body part, while they are waiting to be evaluated or to talk to the athletic trainer or even while watching practice. Becoming familiar with one PROM or questionnaire at first in order to truly understand what the scores mean would be the best route to begin to incorporate PROMs or questionnaires into practice.

Major Findings

Varsity college athletes who sustained an injury were found to exhibit fear avoidance, decreased confidence and mood disturbance. A statistically significant difference was found between immediately after injury scores and return to play scores for the AFAQ, but not the I-PRRS and POMS. All scores showed improvement from the time the athlete was injured to the

time they returned to play. No statistically significant differences were found between starter and non-starter athletes for all questionnaires. There were also no statistically significant differences between athletes with a short-term injury or long-term injury for the AFAQ, I-PRRS, and POMS.

CONCLUSION

When an athlete sustains an injury, they are not only impacted physically, but psychologically too. Multiple factors can influence an athlete's psychological readiness to return to play and should be taken into consideration. Athletic trainers should use sport specific scales, such as the AFAQ, I-PRRS, and POMS, to monitor athletes after sustaining an injury. Doing so will allow clinicians to address psychological barriers early in the rehabilitation process and potentially reduce an athlete's time until he or she can return to play. Ensuring that an athlete is psychologically ready to return to play is an important aspect of the rehabilitation process no matter their status on the team or severity of injury they have sustained.

ACKNOWLEDGEMENTS

We would like to thank the athletic trainers who took the time to ask their athletes if they would like to participate in the study and provided them with the QR codes. We would also like to thank all of the student-athletes who took the time to take the questionnaires and participated in this study.

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TABLES

Table 1. Participants' Demographic Information

Variable	n
Mean age =	19.86 ± 1.23
Sex	
Male	9
Female	5
Sport	
Field Hockey	2
Lacrosse	2
Cross Country	4
Equestrian	1
Soccer	1
Basketball	2
Track	2
Position	
Starter	8
Non-starter	6
Time Loss	
Short-Term	11
Long-Term	3

Table 2. Mean scores and standard deviation for each of the POMS subscores immediately after injury and return to play for all participants.

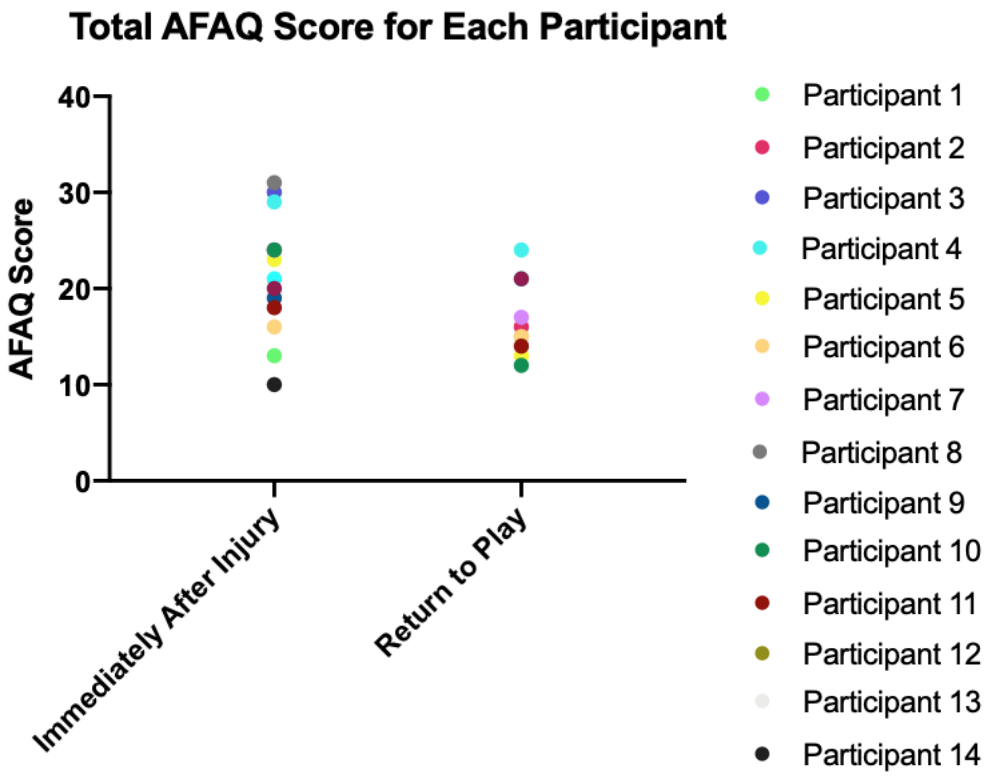
	Immediately After Injury	Return to Play
Confusion-Bewilderment	7.30 ± 5.78	6.44 ± 2.87
Vigor-Activity	12.30 ± 3.63	15.70 ± 4.69
Fatigue-Inertia	7.40 ± 4.98	7.80 ± 4.81
Depression-Dejection	8.90 ± 12.96	5.90 ± 3.39
Anger-Hostility	8.70 ± 8.23	7.20 ± 4.02
Tension-Anxiety	11.40 ± 7.60	10.00 ± 5.59

Table 3. Mean scores and standard deviation for each questionnaire immediately after injury and return to play for all participants.

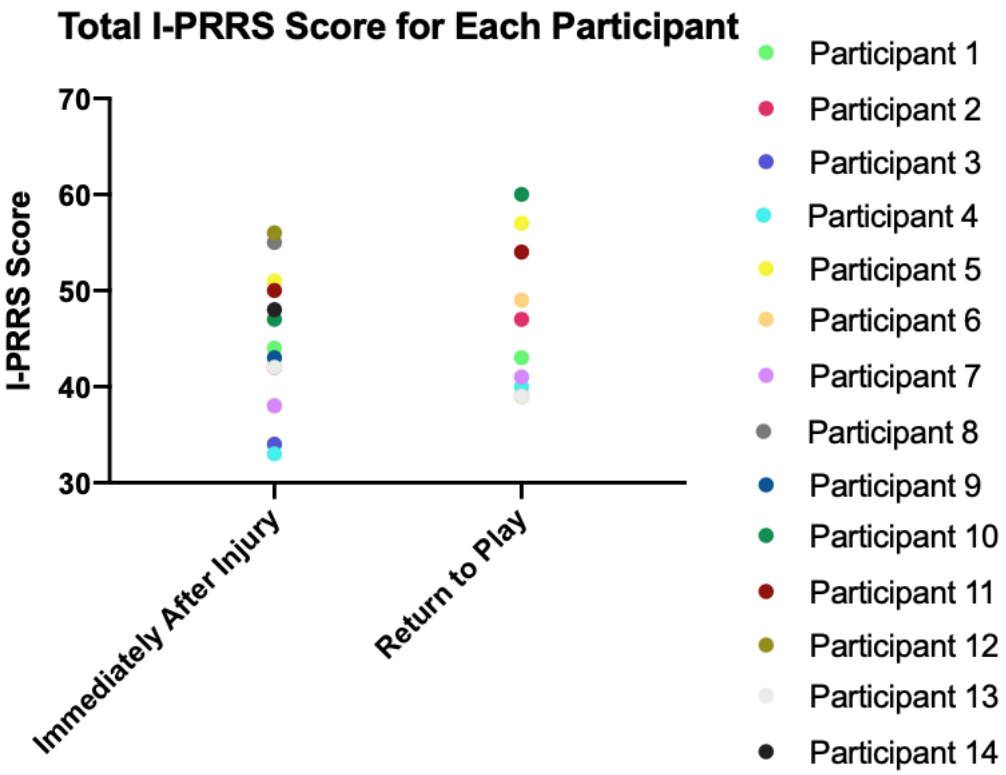
	Immediately After Injury	Return to Play
AFAQ	21.20 ± 4.64	16.80 ± 3.94
I-PRRS	44.10 ± 6.98	46.90 ± 7.82
POMS TMD	130.20 ± 40.30	121.40 ± 21.79

GRAPHS

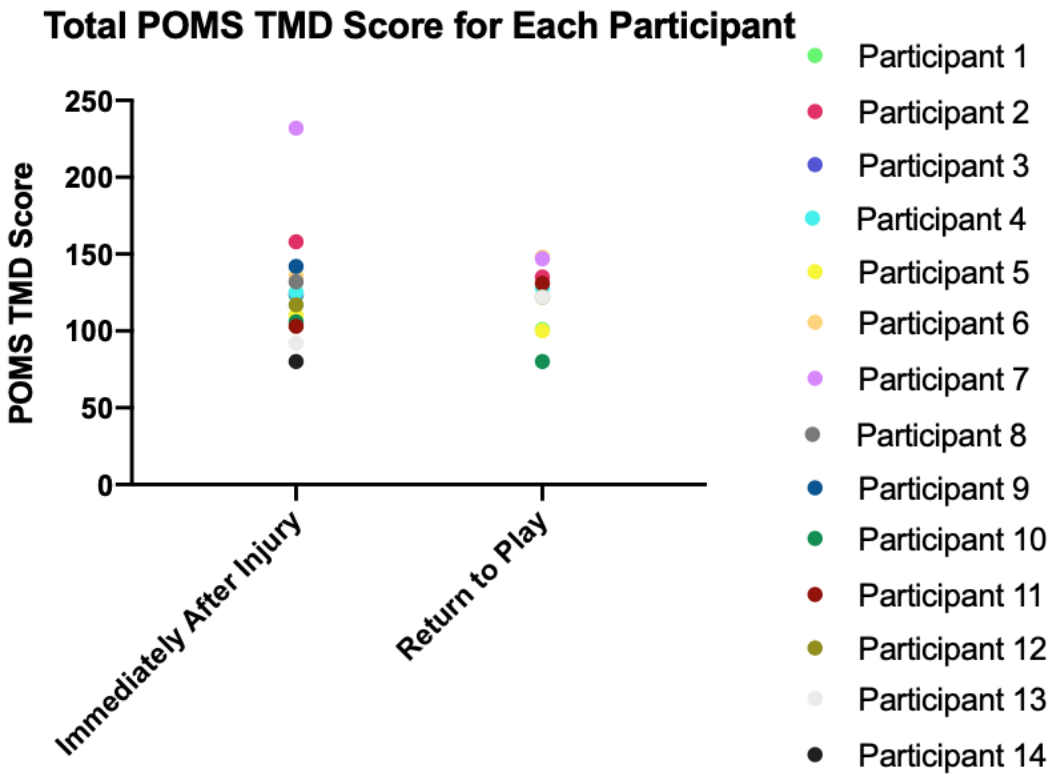
Graph 1. Each individual participant's score immediately after injury and when returning to play for the AFAQ.



Graph 2. Each individual participant's score immediately after injury and when returning to play for the I-PRRS.



Graph 3. Each individual participant's score immediately after injury and when returning to play for the POMS TMD.



APPENDIX A

Operational Definitions

- Psychological Readiness: The point at which the athlete is psychology ready to return to play measured by the Athlete Fear Avoidance Questionnaire and Injury-Psychological Readiness to Return to Sport.
- Severity of Injury:
    - Short Term Injury: Time loss less than 4 weeks.
    - Long Term Injury: Time loss greater than 4 weeks.
- Starter: Athletes defined themselves as a starter at the time of injury in the demographic questionnaire.
- Non-starter: Athletes defined themselves as a non-starter at the time of injury in the demographic questionnaire.

Assumptions

The following assumptions apply to this study:

- Subjects will be truthful when completing demographic information.
- Subjects will be truthful when completing each questionnaire.

Delimitations

- Geographical location
    - Participants only in Indiana and Virginia
- Age Range- 18-25 years old
- Collegiate athletes only

Specific Aims

- To evaluate if there is a difference in the psychological readiness of athletes who sustain an injury who are starters vs. athletes who are non-starters.
    - There will be no difference in psychological readiness scores between athletes that are starters and athletes that are non-starters.
- To investigate if the severity of injury an athlete sustains effects the athlete's psychological readiness to return to play.
    - Athletes who sustain a less serious injury will present with higher levels of psychological readiness than those who sustained a more serious injury.

Independent Variables

- Starter
- Non-starter
- Short-term injury
- Long-term injury

Dependent Variables

- Psychological readiness to return to play
    - AFAQ scores
    - I-PRRS scores
    - POMS scores

APPENDIX B
Questionnaires used in study

Immediately After Injury Demographic Information

Today's Date	
Date of Injury	
Age	
Sex	
Sport	
Which University do you attend?	
Year in college	
Type of injury	
Were you a starter or non-starter at the time of injury?	
Where did your injury occur?	
Have you ever sustained this injury before?	
Rate your pain right now on a scale of 0-10	

Athlete Fear Avoidance Questionnaire

Instructions: We are interested in your feelings or thoughts when in pain as a result of a sport injury. Using the following scale, please indicate the degree to which you have these thoughts and feelings when you are in pain due to a sports injury.

Rating	**1**	**2**	**3**	**4**	**5**
Meaning	Not at all	To a slight degree	To a moderate degree	To a great degree	Completely agree

Statement	Rating
1. I will never be able to play as I did before my injury	
2. I am worried about my role with the team changing	
3. I am worried about what other people will think of me if I don't perform at the same level	
4. I am not sure what my injury is	
5. I believe that my current injury has jeopardized my future athletic abilities	
6. I am not comfortable going back to play until I am 100%	
7. People don't understand how serious my injury is	
8. I don't know if I am ready to play	
9. I worry if I go back to play too soon I will make my injury worse	
10. When my pain is intense, I worry that my injury is a very serious one	

Injury Psychological Readiness to Return to Sport Scale (I-PRRS)

Injury Psychological Readiness to Return to Sport (I-PRRS)

Please rate your confidence to return to your sport on a scale from 0 to 10
0 = no confidence at all
5 = moderate confidence
10 = complete confidence

1. My overall confidence to play is:

0 1 2 3 4 5 6 7 8 9 10

No Confidence Complete Confidence

2. My confidence to play without pain is:

0 1 2 3 4 5 6 7 8 9 10

No Confidence Complete Confidence

3. My confidence to give 100% effort is:

0 1 2 3 4 5 6 7 8 9 10

No Confidence Complete Confidence

4. My confidence to not concentrate on the injury is:

0 1 2 3 4 5 6 7 8 9 10

No Confidence Complete Confidence

5. My confidence in the injured body part to handle demands of the situation is:

0 1 2 3 4 5 6 7 8 9 10

No Confidence Complete Confidence

6. My confidence in my skill level/ability is:

0 1 2 3 4 5 6 7 8 9 10

No Confidence Complete Confidence

Profile of Mood States

The numbers refer to these phrases.

0 = Not at all
1 = A little
2 = Moderately
3 = Quite a bit
4 = Extremely

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	NOT AT ALL	A LITTLE	MODERATELY	QUITE A BIT	EXTREMELY
1. Friendly	0	1	2	3	4
2. Tense	0	1	2	3	4
3. Angry	0	1	2	3	4
4. Worn out	0	1	2	3	4
5. Unhappy	0	1	2	3	4
6. Clear-headed	0	1	2	3	4
7. Lively	0	1	2	3	4
8. Confused	0	1	2	3	4
9. Sorry for things done	0	1	2	3	4
10. Shaky	0	1	2	3	4
11. Listless	0	1	2	3	4
12. Peeved	0	1	2	3	4
13. Considerate	0	1	2	3	4
14. Sad	0	1	2	3	4
15. Active	0	1	2	3	4
16. On edge	0	1	2	3	4
17. Grouchy	0	1	2	3	4
18. Blue	0	1	2	3	4
19. Energetic	0	1	2	3	4
20. Panicky	0	1	2	3	4
21. Hopeless	0	1	2	3	4
22. Relaxed	0	1	2	3	4
23. Unworthy	0	1	2	3	4
24. Spiteful	0	1	2	3	4
25. Sympathetic	0	1	2	3	4
26. Uneasy	0	1	2	3	4
27. Restless	0	1	2	3	4
28. Unable to concentrate	0	1	2	3	4
29. Fatigued	0	1	2	3	4
30. Helpful	0	1	2	3	4
31. Annoyed	0	1	2	3	4
32. Discouraged	0	1	2	3	4
33. Resentful	0	1	2	3	4
34. Nervous	0	1	2	3	4
35. Lonely	0	1	2	3	4
36. Miserable	0	1	2	3	4
37. Muddled	0	1	2	3	4
38. Cheerful	0	1	2	3	4
39. Bitter	0	1	2	3	4
40. Exhausted	0	1	2	3	4
41. Anxious	0	1	2	3	4
42. Ready to fight	0	1	2	3	4
43. Good natured	0	1	2	3	4
44. Gloomy	0	1	2	3	4
45. Desperate	0	1	2	3	4
46. Sluggish	0	1	2	3	4
47. Rebellious	0	1	2	3	4
48. Helpless	0	1	2	3	4
49. Weary	0	1	2	3	4
50. Bewildered	0	1	2	3	4
51. Alert	0	1	2	3	4
52. Deceived	0	1	2	3	4
53. Furious	0	1	2	3	4
54. Efficient	0	1	2	3	4
55. Trusting	0	1	2	3	4
56. Full of pep	0	1	2	3	4
57. Bad-tempered	0	1	2	3	4
58. Worthless	0	1	2	3	4
59. Forgetful	0	1	2	3	4
60. Carefree	0	1	2	3	4
61. Terrified	0	1	2	3	4
62. Guilty	0	1	2	3	4
63. Vigorous	0	1	2	3	4
64. Uncertain about things	0	1	2	3	4
65. Bushed	0	1	2	3	4

MAKE SURE YOU HAVE ANSWERED EVERY ITEM.

EDITS POM 021

Return to Play Demographic Information

Today's Date	
Date of Injury	
Return to Participation Date	
Age	
Sex	
Sport	
Which University do you attend?	
Year in college	
Type of injury	
Did you need surgery for your injury?	
Rate your pain right now on a scale of 0-10	

APPENDIX C

Measures of Psychological Readiness

A number of psychological questionnaires have been used to assess a person's psychological state after injury. Some psychological questionnaires are specific to the general population before they return to work or activities of daily living, while others are more specific to athletes who are returning to play their respective sport.

Athlete Fear Avoidance Questionnaire.[11] The Athlete Fear Avoidance Questionnaire is a scale that measures injury-related fear avoidance in athletes with 10 statements that are related to injuries and athletics. Athletes who fill out the questionnaire rate their thoughts about each of the specific statements when experiencing pain. Each statement is rated on a scale from one to five (one = they do not agree with the statement at all and five = they completely agree with the statement). Athletic trainers can use this questionnaire to identify fear avoidance in athletes, which can negatively affect one's rehabilitation. This scale will be used in the study because the statements on the questionnaire are specific to athletes and not only the general population. The statements on the questionnaire can be understood by an athlete, which is important since athletes will be the participants in this study. The Athlete Fear Avoidance Questionnaire has been used before and validated to determine fear avoidance in athletes related to their injury caused by their respective sport and recovery. Reliability, as well as good internal and external validity of the questionnaire, was established by Dover and Amar; therefore, making it a questionnaire that can provide acceptable results for this study. A high Cronbach of 0.805 indicated that internal consistency was good. Significant correlations between the Pain Catastrophizing Scale and Fear-Avoidance Beliefs Questionnaire established concurrent validity,

since those are two existing, validated assessment tools of catastrophizing and fear-avoidance beliefs.[11]

Injury Psychological Readiness to Return to Sport Scale (I-PRRS).[13] The Injury Psychological Readiness to Return to Sport Scale is a six-item response scale with each response item ranging from 0 to 100 with intervals of 10. This scale is used to assess an athlete's psychological readiness to return to full sport participation after athletic injury and measures athlete confidence at a particular time. The scores from the six items are then summed and divided by ten to calculate a total score for psychological readiness. This scale will be used in the study because it has been developed and validated to be used as a tool to assess and determine if an athlete is psychologically ready to return to their sport following an injury. Preliminary evidence for reliability and validity of the I-PRRS was demonstrated by Glazer.

Profile of Mood States.[13,14] The Profile of Mood States is a 65-item scale used to assess athlete total mood disturbance before returning to sport participation after athletic injury. The POMS assesses 6 mood states: Tension-Anxiety, Depression- Dejection, Anger-Hostility, Vigor-Activity, Fatigue-Inertia, and Confusion-Bewilderment. A Total Mood Disturbance (TMD) score is obtained by adding the negative mood factors of Tension-Anxiety, Depression-Dejection, Anger-Hostility, Fatigue-Inertia, and Confusion-Bewilderment, subtracting the score of the positive mood factor, Vigor-Activity, and then adding a constant of 100. In a study wanting to extend the validation of the Profile of Mood States, Terry, Lane and Fogarty had 1,277 adult athletes in two different settings complete the POMS. One group completed the POMS one-hour before competition while the other group completed the POMS at the start or end of class. The results of this study suggested that POMS is an appropriate tool to assess mood in an environment where there is a limited amount of time available for data collection.[4] The authors

concluded that the POMS can be extended from adolescent to adult populations while supporting its validity. This will be an appropriate tool to use for the study because we will have athletes taking the POMS who are already busy student athletes who will not have time or be willing to take a significant amount of time out of their day to volunteer to participate in a study. The validation was complete on an athletic population of adults, since it was also previously used as a tool for measuring moods in adolescents, which will be beneficial no matter if high school or college aged athletes will be used as subjects in the study.

KIRSTEN BLAKE, MS, LAT, ATC

EDUCATION

INDIANA UNIVERSITY Bloomington, IN

***Master of Science**: Kinesiology with an Emphasis in Athletic Training* June 2020

CAATE-Accredited Post-Professional Athletic Training Program

Thesis: *"The Psychological Readiness of Athletes After Sustaining an Injury"*

LYNCHBURG COLLEGE Lynchburg, VA

***Bachelor of Science**: Athletic Training* May 2018

CAATE-Accredited Professional Athletic Training Program

Research Project: *"Comparison of Fear Avoidance Scores in Male and Female Division III Athletes"*

CERTIFICATIONS/LICENSES

- **Board of Certification (BOC)** 2018 – Present
  - Certification # 2000031703
- **Indiana Professional Licensing Agency (IPLA) – Athletic Training License** 2018 – Present
  - License # 36003029A
- **National Provider Identification (NPI)** 2017 – Present
  - NPI # 1811415409
- **Cardiopulmonary Resuscitation / Automatic External Defibrillator** 2014 – Present
  - American Heart Association / BLS Provider
- **Graston Technique MI Provider** 2018 – Present
  - Instrument-Assisted Soft Tissue Mobilization Technique

PROFESSIONAL EXPERIENCE

Eastern Greene High School Bloomfield, IN

Head Athletic Trainer 2018 – 2020

- Provide primary medical coverage of practice and games for all sanctioned sports.
  - Male Sports: football, cross country, basketball, track and field, baseball
  - Female Sports: volleyball, cross country, basketball, track and field, softball
- Evaluate athletic injuries both on the field / court and in the clinic.
- Create rehabilitation protocols and assess return to participation.
- Administer baseline ImPACT testing for all freshmen, junior and new student-athletes.
- Manage return to play concussion protocol following physician clearance.
- Maintain inventory and assist with purchase of supplies.
- Supervise and mentor high school athletic training student aides.
- Complete and update medical documentation in SportsWare.
- Educate parents about heat illnesses, concussions and injury prevention.

- Establish and maintain strong relationships with physicians and healthcare professionals.

Owen Valley High School Spencer, IN
Athletic Trainer 2018

- Provided primary coverage for football pre-season practices and scrimmages.
- Evaluated injuries both on the field and in the clinic.
- Created and supervised rehabilitation protocols of athletes.
- Assessed readiness to return to participation of athletes.
- Managed return to play concussion protocol following physician clearance.
- Completed and updated medical documentation in FinalForms.

Liberty University Club Sports Lynchburg, VA
Internship 2018

- Provided supervised care for ice hockey and wrestling.
- Evaluated and treated injuries.
- Developed and implemented rehabilitation programs.
- Completed and updated documentation in electronic medical record system.

Lynchburg College Lynchburg, VA
Athletic Training Clinical Education 2015 – 2018

- Lynchburg College Men's Soccer, Women's Softball, Men's Lacrosse, Women's Volleyball
- Liberty University Ice Hockey
- Heritage High School
- William Campbell High School

RELATED EXPERIENCE

Indiana University Gatorade Summer Sports Camps Bloomington, IN
Gatorade Team Leader 2019

- Assisted in managing the inventory and storage of Gatorade product.
- Managed product mixing areas.
- Delivered talking points to athletes.
- Mixed, transported and distributed Gatorade product to camp site locations.

Owen Valley High School Preparticipation Physical Exams Spencer, IN
2019

- Assisted with conducting mass physicals for over 200 high school student athletes.

Lynchburg College Sports Medicine Symposium Lynchburg, VA
2018

- Member of the committee that planned the symposium, recruited speakers, developed short biographies about the speakers, and ensured it ran smoothly the day of the event.

Lynchburg College Athletic Training Massage Days Lynchburg, VA

- Provided soft tissue massages for peers during finals week. 2014 – 2016

RESEARCH

The Psychological Readiness of Athletes After Sustaining an Injury Bloomington, IN

- Committee: Dr. John Raglin, Dr. Carrie Docherty, Dr. Jackie Kingma 2020

Comparison of Fear Avoidance Scores in Male and Female Division III Athletes Lynchburg, VA

- Poster Presentation: Lynchburg College Student Scholar Showcase 2018
- Poster Presentation: Lynchburg College Athletic Training Student Gala 2017

LEADERSHIP

Lynchburg College Club Officer Lynchburg, VA

- Iota Tau Alpha Vice President (Athletic Training Honor Society) 2017 – 2018
- Athletic Training Club Treasurer 2016 – 2018
- Iota Tau Alpha Treasurer 2016 – 2017
- Athletic Training Club Public Relations 2015 – 2016

HONORS / AWARDS

- **Sam Newberg Certificate of Appreciation** 2020
  - Awarded to graduates of the Indiana University Post-Professional Athletic Training Program.

- **Mid-Atlantic Athletic Trainers' Association Larry Sutton Scholarship Award** 2018
  - Awarded to a graduating senior with intention to continue academic work beyond the completion of the professional athletic training program level.

- **Jacqueline W. Asbury Academic Award** 2018
  - Awarded to a student who demonstrated an excellent understanding of the concepts of the discipline (health, movement science, and human performance) and was able to perform and/or teach the skills of the discipline in an exemplary manner, and who displayed a healthy lifestyle.

- **Lynchburg College Dean's List** 2014 – 2018

MEMBERSHIPS

- National Athletic Trainers' Association 2017 – Present
- Great Lakes Athletic Trainers' Association 2018 – Present
- Indiana Athletic Trainers' Association 2018 – Present
- Mid-Atlantic Athletic Trainers' Association 2017 – 2018
- Virginia Athletic Trainers' Association 2017 – 2018

COMMUNITY SERVICE

- **Salvation Army** 2015 – 2017
    - Cooked and served breakfast at the local Salvation Army.

- **Trail Clean-Up** 2016 – 2017
    - Cleaned up litter along a local community walking / running trail.